

# Lateral Knee Pain and Orthotic Support

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Active patients frequently report soreness and/or aching on the outside of the knee and lower thigh. On many occasions, this location is described as a secondary or "offhand" area of pain, but it may become a chronically disabling condition known as iliotibial band syndrome (ITBS). Chiropractic care and orthotic support can help to alleviate this problem.

Iliotibial band syndrome is the leading cause of lateral knee pain in walkers and runners, with an incidence as high as 12 percent of all running-related overuse injuries.<sup>1,2</sup> The syndrome results from recurrent friction of the iliotibial band (ITB) sliding over the lateral femoral epicondyle. This problem can eventually become a sharp, burning pain at the lateral knee that persists after just a small amount of walking.

Identifying iliotibial band syndrome isn't difficult; however, treating it can be challenging because underlying biomechanical imbalances often contribute to the patient's persistent pain and disability. A complete recovery and return to all recreational activities usually requires a comprehensive postural and biomechanical evaluation.

## Connections and Functions

The ITB is the continuation of the tendinous portion of the tensor fascia lata muscle. It also attaches indirectly to parts of the gluteus medius, gluteus maximus and vastus lateralis muscles. An intermuscular septum connects the ITB to the linea aspera femoris until just proximal to the lateral femoral epicondyle. Distally, the ITB spreads out and inserts on the lateral border of the patella, the lateral patellar retinaculum and Gerdy's tubercle of the tibia. The ITB is only free from bony attachment between the superior aspect of the lateral femoral epicondyle and Gerdy's tubercle.<sup>3</sup>

The ITB controls and decelerates adduction of the thigh as the foot is planted. It also contributes to the biomechanical stability of the pelvis on the leg, as well as acting as an anterolateral stabilizer of the knee. During knee extension, the ITB moves anteriorly and then slides posteriorly as the knee flexes, remaining tense in both positions.

A study of runners with ITB symptoms found that the posterior edge of the band was impinging against the lateral epicondyle just after foot strike in the gait cycle.<sup>4</sup> The friction first occurred at less than 30 degrees of knee flexion. Recurrent rubbing can produce irritation, especially beneath the posterior fibers of the ITB, which are thought to be tighter against the lateral femoral condyle than the anterior fibers.

## Degeneration, Not Inflammation

It is now known that lateral knee pain that develops in cases of ITBS is not actually due to

inflammation, but to an underlying degeneration of collagen tissues in response to mechanical overuse. There is a loss of collagen continuity and an increase in ground substance and cellularity caused by fibroblasts and myofibroblasts, but not inflammatory cells.<sup>5</sup> This is the reason that anti-inflammatory strategies (such as NSAIDs and corticosteroid injections) are not indicated for these conditions, and may actually interfere with complete repair.<sup>6</sup>

### Less Stress, Better Balance

Initially, a reduction in stressful activities is necessary to allow the body to catch up with healing. This means limiting all aggravating sport and work activities for up to a month. Running and any other potentially exacerbating activity, such as cycling, should be avoided to reduce the repetitive mechanical stress at the lateral femoral condyle.<sup>7</sup> Contract-relax exercises to help lengthen shortened iliopsoas, rectus femoris and gastrocnemius-soleus muscles can be performed three times daily in three bouts of a seven-second submaximal contraction, followed by a 15-second stretch (contract-relax procedure).

Particular attention should be given to increasing the length of the ITB. If necessary, gait and treadmill-running analyses can be used to screen for dynamic muscle imbalance or weakness contributing to the injury. Chiropractic adjustments for biomechanical imbalances and restrictions in the lumbopelvic region are usually necessary.

### Support and Control From the Feet Up

As S.L. James observed, runners with ITBS often demonstrate excessive pronation at heel strike.<sup>8</sup>

Schwellnus has noted that leg-length discrepancies contribute to ITBS.<sup>9</sup> This can be secondary to a true anatomic discrepancy or environmentally induced by training on uneven roads. Studies have demonstrated a significant decrease in tibial internal rotation and pronation velocity when using orthotics, which can help to control the position of the knee and absorb some of the joint stress at heel strike.<sup>10,11</sup>

In terms of long-term treatment, most patients with ITBS will need stabilizing, custom-made orthotics to help control underlying biomechanical faults.

The most common problem is excessive pronation, which causes a variety of symptoms but responds well to the use of flexible or semi-flexible orthotics.<sup>12</sup> In some cases, an added heel lift will be needed to compensate for anatomical leg-length discrepancy.

### References

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